

wherein each web page to be printed is represented in a hash table, and wherein if a given web page appears in the hash table more than once, the given web page is only printed once.

34. (ONCE AMENDED) A computer program product in a computer readable medium for printing web pages, the computer program product comprising:

first instructions, responsive to an input selecting a current web page for printing, for determining whether a maximum depth for printing has been reached;

second instructions for identifying a set of universal resource identifiers located within the current web page in response to the maximum depth being unreached;

third instructions for retrieving the web page identified by the set of uniform resource locators; and

fourth instructions for printing each web page retrieved;

wherein each web page retrieved is represented in a hash table, and wherein if a web page appears more than once in the hash table, said web page is only printed once.

35. The method of Claim 2, wherein web pages selected for printing are represented in a hash table, and wherein if a web page matches an entry in the hash table, that web page is not printed.

#### REMARKS

Claims 2-35 are pending in the present application. All rejections are respectfully traversed. This reply is intended to address all issues raised by Examiner and is believed to leave this application in condition for allowance. Reconsideration of the Claims is respectfully requested.

**I. 35 U.S.C. § 103, Obviousness**

In rejecting Claim 2, the Examiner states:

Claims 2-7, and 19-24 are rejected under 35 U.S.C. 102(c) as being unpatentable by Brobst et al. (Brobst), Patent No. 6,061,700, Dubbels et al. (Dubbels), Patent No. 6,222,634, and further in view of Hoffert et al (Hoffert), Patent No. 6,282,549.

As to claim 2, Brobst teaches the invention as claimed, a method in data processing system for printing web pages, the method comprising the data processing system implemented steps of:

receiving a request a web page; (col. 3, lines 12-40; receives a web page request, then prints related web pages); printing the web page and each web page associated with the web page (Abstract); wherein the printing step prints each of a plurality of web pages associated with the web page on selected levels below the web page (col. 5, line 42 -col. 6 line 42; printing the web page that includes any nested levels below the web page);

However, Brobst does not teach the printing step automatically and individually prints each of a plurality of web pages. Dubbels teaches a web page print mechanism automatically generating a web page that contains all the user-selected web pages and a web client print mechanism 320 that is used to print individual web pages (claim 1, and col. 5, lines 21-40). Since Dubbels teaches these limitations in an environment such as a system for printing related web pages (levels below a selected web page) which is similar to the system of Brobst, thus, it would have been obvious to one of ordinary skill in the Data Processing art at the time of the invention to combine the teachings of Brobst and Dubbels to include the printing step automatically and individually prints each of a plurality of web pages in order to make the system more efficient.

Brobst and Dubbels teach the limitations as discussed above. However, Brobst-Dubbels do not teach if a first web page of the plurality appears more than once among the plurality, the first web page is only printed once. In the same field of endeavor, Hoffert teaches a hash table scheme is used to guarantee that only unique new URLs (web pages) are added to the database and if any URL link that is already found in the hash table, the URL is not added to the list of URLs for processing (col. 3, line 28-col. 4, line 23). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Brobst-Dubbels and Hoffert to include a first web page of the plurality appears more than once among the plurality, the first web page is only printed once. By doing so, it would prevent printing duplicate data and also prevent the waste or loss of time and papers.

Independent Claim 2 is reproduced below for discussion:

2. A method in a data processing system for printing web pages, the method comprising the data processing system implemented steps of:  
receiving a request to print a web page; and  
printing the web page and each web page associated with the web page;  
wherein the printing step automatically and individually prints each of a plurality of web pages associated with the web page on selected levels below the web page; and wherein if a first web page of the plurality appears more than once among the plurality, said first web page is only printed once.

Claim 2 includes the limitation, "wherein if a first web page of the plurality appears more than once among the plurality, said first web page is only printed once." It is respectfully asserted that this limitation is not shown in any of the references which the Examiner seeks to combine.

The Examiner cites Hoeffert et al. (Hereinafter Hoeffert) as showing, "a hash table scheme...used to guarantee that only unique URLs (web pages) are added to the database and if any URL link that is already found in the hash table, the URL is not added to the list of URLs for processing." (Office Action dated 11.20.02, pages 3-4.)

Hoeffert shows a search engine indexing mechanism such as a web "crawler" that finds URLs and deposits their contents in a database. Hoeffert teaches that,

When a new site is found by the crawler, there is a check against the internal database to ensure that the site has not already been visited (within a small period of time); this guarantees that the crawler only indexes unique sites within its database, and does not index the same site repeatedly. A hash table scheme is used to guarantee that only unique URLs are added to the database.

[Column 3 lines 37-44.]

Though this passage teaches alleviation of a redundant indexing of URLs, it does not teach the claimed limitation of, "wherein if a first web page of the plurality appears more than once among the plurality, said first web page is only printed once," as claimed in at least Claim 2.

As discussed further below, the system of Hoffert requires that redundant URLs be purged from the list. This is because of the specific way that crawlers index web pages. As Hoffert states at col. 3, lines 28-33,

The crawler starts with a seed of multimedia specific URL sites to begin its search. . . . Each thread parses HTML pages (using a tokenizer with lexical analysis) and follows outgoing links from a page to search for new references to media files.

This passage describes a standard function of search engine crawlers--they follow the links in all pages to find more pages which are then indexed. Links from those pages are then crawled and indexed, eventually covering a massive number of URLs. The set of crawled URLs comprises the set of web pages searchable by the given search engine. Since nearly all web pages are linked to other web pages, crawling all links would necessarily result in redundant URLs being indexed. Therefore, for an indexing function to work, it must have means to prevent redundant indexing of already indexed pages.

Though Hoffert shows the use of a hash table to prevent redundant indexing of URLs, it does not speak to prevention of redundant printing of web pages as taught by at least Claim 2. It is respectfully asserted that the Examiner is using impermissible hindsight to reconstruct the applicant's invention by using applicant's disclosure as a template. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching, suggestion, or incentive supporting the combination. *In re Geiger*, 815 F.2d 686, 688, 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987). It is also noted that Hoffert may not be used exactly as it is to show the limitation of Claim 2, but rather the teaching of Hoffert must be modified. Such modification is not suggested or taught in the cited references.

Hoffert, which Examiner combines with Brobst and Dubbels, only teaches that, "When a new site is found by the crawler, there is a check against the internal database to ensure that the site has not already been visited (within a small period of time); this guarantees that the crawler only indexes unique sites within its database, and does not index the same site repeatedly."

There is no apparent teaching in Hoffert that applies the use of a list or hash table to prevent the redundant printing of selected web pages. Further, such teaching is certainly not taught in the context of other limitations present in Claim 2, such as, "printing the web page and each web page associated with the web page, wherein the printing step automatically and individually prints each of a plurality of web pages associated with the web page on selected levels below the web page."

A fundamental notion of patent law is the concept that invention lies in the new combination of old elements. Therefore, a rule that every invention could be rejected as obvious by merely locating each element of the invention in the prior art and combining the references to formulate an obviousness rejection is inconsistent with the very nature of "invention." Consequently, a rule exists that a combination of references made to establish a *prima facie* case of obviousness must be supported by some teaching, suggestion, or incentive contained in the prior art which would have led one of ordinary skill in the art to make the claimed invention.

Applicant finds no teaching, suggestion, or incentive contained in the cited references which would suggest to one of ordinary skill in the art to apply the single cited element of Hoffert with the teachings of Brobst and Dubbels. For example, Hoffert teaches that "when a new site is found by the crawler, there is a check against the internal database to ensure that the site has not already been visited.... A hash table scheme is used to guarantee that only unique URLs are added to the database." This functionality is not particularly advantageous when combined with Brobst and Dubbels, since they do not search globally for URLs as search engines from Hoffert do. In short, Hoffert teaches using a hash table to limit URLs in the index because the crawler will crawl vast numbers of web pages during its work, and redundant pages are very likely to crop up. However, in Brobst and Dubbels, only specific web pages are tapped for printing, and general

redundancies are not directly dealt with because they are unlikely to occur according to the teachings of Brobst and Dubbels.

For example, Brobst teaches that multiple web pages can be combined into a single conglomerate web page for printing as a single document. [See Brobst, col. 3, line 66-col. 4, line 11.] This single document is then printed after it is compiled. And in Dubbels, the user selects the pages to be printed from a list. [See Dubbels, Abstract.]

Hence, the systems of Brobst and Dubbels would not particularly benefit from adding the teaching of Hoffert without significant modification to the references.

Moreover, the examiner may not use the claimed invention as an "instruction manual" or "template" to piece together the teachings of the prior art so that the invention is rendered obvious. *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992). Such reliance is an impermissible use of hindsight with the benefit of applicant's disclosure. *Id.* Therefore, absent some teaching, suggestion, or incentive in the prior art, Brobst, Dubbels and Hoffert cannot be properly combined to form the claimed invention. As a result, absent any teaching, suggestion, or incentive from the prior art to make the proposed combination, the presently claimed invention can be reached only through the impermissible use of hindsight with the benefit of applicant's disclosure a model for the needed changes.

In making an obviousness determination, one cannot pick and choose among the individual elements or assorted prior art references to recreate the claimed invention. *Symbol Technologies, Inc. v. Opticon, Inc.*, 935 F.2d 1569, 19 U.S.P.Q.2d 1241 (Fed. Cir. 1991). Instead, whether the prior art made obvious the invention must be determined by looking for some teaching or suggestion in the references to support their use in the particular claimed invention. *Id.*

The mere fact that the prior art could be readily modified to arrive at the claimed invention does not render the claimed invention obvious; the prior art must suggest the desirability of such a modification. *In re Ochiai*, 71 F.3d 1565, 1570, 37 U.S.P.Q.2d 1127, 1131 (Fed. Cir. 1996); *In re Gordon*, 733 F.2d 900, 903, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). In this case, the teaching of Hoffert must be modified in order to apply its search engine teachings to the printing of web pages.

Furthermore, where the claims require that an element serve a specific purpose, the fact that a similar element was used for another purpose in the prior art or that the claimed element has a prior art attribute does not establish a *prima facie* case of obviousness. *In re Wright*, 848 F.2d 1216, 6 U.S.P.Q.2d 1959, (Fed. Cir. 1988). In the present case, Hoffert teaches the use of a hash table to keep track of URLs it has indexed. However, Hoffert does not teach using a hash table in order to keep track of web pages slated for printing, in order to prevent multiple printing of the same pages. Though use of hash tables may be known in the art, no art has been cited which uses hash tables to limit the printing of web pages in the context of the present claims.

Claim 2 also includes the limitation, "printing the web page and each web page associated with the web page; wherein the printing step automatically and individually prints each of a plurality of web pages associated with the web page on selected levels below the web page...."

The Examiner states that this limitation is shown in Dubbels, citing Claim 1 and col. 5, lines 21-40, stating in the Office Action at page 3, "Dubbels teaches a web page print mechanism automatically generating a web page that contains all the user selected web pages and a web client print mechanism that is used to print individual web pages. Since Dubbels teaches these limitations in an environment such as a system for printing related web pages (levels below a selected web page) which is similar to the system of Brobst, thus, it would have been obvious to one of ordinary skill in the art...to combine the teachings of Brobst and Dubbels to include the printing step automatically and individually prints each of a plurality of web pages in order to make the system more efficient."

Applicant believes the relevant passage from Claim 1 of Dubbels includes the phrase, "a mechanism for printing the at least one web page selected by the user using the web page selection mechanism." Column 5, lines 21-40 teach a print applet residing on a web client that allows printing of a web page (and related pages) with the press of a "Print" button, for example.

However, the Examiner fails to make a *prima facie* case of obviousness because the Examiner does not aver that there is suggestion, incentive, or motivation in the art to combine the two references. The Examiner only states, "Since Dubbels teaches these

limitations in an environment such as a system for printing related web pages (levels below a selected web page) which is similar to the system of Brobst, thus, it would have been obvious to one of ordinary skill in the data processing art at the time of the invention to combine the teachings of Brobst and Dubbels to include the printing step automatically and individually prints each of the plurality of web pages in order to make the system more efficient." It is respectfully asserted that pointing to a vague benefit which is not taught or suggested in the references does not fulfill a *prima facie* case of obviousness.

Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching, suggestion, or incentive supporting the combination. *In re Geiger*, 815 F.2d 686, 688, 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987). Here, the Examiner has proposed combining two references without any teaching, suggestion, or incentive supporting the combination.

It is further pointed out that Dubbels does not teach the claimed limitation in Claim 2 of, "wherein the printing step automatically and individually prints each of a plurality of web pages associated with the web page..." Note the claim language indicates each web page is to be printed individually, not as part of a conglomerate web page made by combining other web pages.

Given this limitation in Claim 2, it is noted that Dubbels does not teach "individually" printing web pages, but rather it combines several web pages together into a "conglomerate" page, which is then printed. Dubbels states at col. 6, lines 27-36:

The list of related web pages is then passed to the web client, which displays the list to the user. The user then selects the pages on the list to print. The list of selected pages is then passed to the web server, which uses this information to build a temporary web page that is a conglomerate of all the pages that were selected for printing. The temporary conglomerate web page is built by the web page merging mechanism, which performs the necessary functions to convert several individual web pages into a single web page.

This passage clearly indicates that Dubbels does not teach printing the web pages individually, but rather as a conglomerate, single web page. Hence, it is respectfully asserted that Dubbels does not show the claimed limitation of "wherein the printing step



automatically and individually prints each of a plurality of web pages," as claimed in Claim 2.

Independent Claims 16 and 19 include similar limitations as Claim 2, and are also therefore believed allowable by virtue of the preceding arguments.

In rejecting Claim 8, the Examiner states:

As to claim 8, Brobst teaches the invention as claimed, a method in a data processing system for printing web pages, the method comprising the data processing system implemented steps of:  
responsive to an input selecting a current web page, determining whether a maximum depth for printing has been reached (col. 5, lines 42-67; on one selected web page, a user defines the nesting level, determines the depth into the nesting tree 400);  
identifying a set of universal resource identifiers located within the current web page in response to the maximum depth being unreached (col. 6, line 54- col. 7, line 19; when all web pages and their digging levels have been defined, a URL list of the web pages and the associated digging level is created);  
retrieving the web page identified by the set of uniform resource locators (col. 7, lines 29-60; for each URL in the URL list, the URL is added to the URL container for retrieving);  
printing each web page retrieved (col. 6, line 54 -col. 7, line 19; appending all related web pages together and print them).

### ANALYSIS

Claim 8 is reproduced below:

8. (ONCE AMENDED) A method in a data processing system for printing web pages, the method comprising the data processing system implemented steps of:

responsive to an input selecting a current web page for printing,  
determining whether a maximum depth for printing has been reached;

identifying a set of universal resource identifiers located within the current web page in response to the maximum depth being unreachd;  
retrieving the web page identified by the set of uniform resource locators;  
and  
printing each web page retrieved;  
wherein each web page retrieved is represented in a hash table, and  
wherein if a web page appears more than once in the hash table, said web page is only printed once.

Claim 8 includes the limitation, "wherein each web page retrieved is represented in a hash table, and wherein if a web page appears more than once in the hash table, said web page is only printed once." It is respectfully asserted that this limitation is not taught by any of the cited references.

The Examiner cites Hoffert which appears to teach a hash table to prevent redundant indexing of web pages by web crawler or indexing programs for search engines. However, the teaching of Hoffert in the context of a search engine indexing function does not make the use of a hash table in the context of the present invention obvious.

Hoffert shows a search engine indexing mechanism such as a web "crawler" that finds URLs and deposits their contents in a database. Hoffert teaches that,

When a new site is found by the crawler, there is a check against the internal database to ensure that the site has not already been visited (within a small period of time); this guarantees that the crawler only indexes unique sites within its database, and does not index the same site repeatedly. A hash table scheme is used to guarantee that only unique URLs are added to the database.

[Column 3 lines 37-44.]

Hoffert does not deal with printing web pages, but rather with indexing web pages (URLs) for a search engine. Search engines use indexing functions, also called crawlers or spiders, which "crawl" the Internet indexing the web pages they find (i.e., putting the contents of the page in an index which is searched by the engine). Indexing functions

must periodically recrawl web pages to make sure the indexed pages are up to date. Since the vast majority of web pages on the Internet are linked to other pages, and since the purpose of an indexing function is to periodically crawl virtually every web page, the same page will almost certainly be reached by different links and a redundancy check is necessary. This is the context in which the hash table is mentioned in Hoffert.

It is therefore respectfully asserted that Hoffert teaches away from the present invention, because the periodic nature of Internet indexing requires that the hash table entries (URLs) be temporary only, so that the same web page can later be updated by recrawling the page. This requires some mechanism not described in Hoffert to clear the hash table periodically, allowing re-indexing of URLs to determine if new content has been added.

Hence, the use of the hash table in Hoffert has a different purpose and requires different implementation (periodic removal of individual URLs while leaving others) from the hash table use of the present invention.

The purposes of the present invention and of the other reference cited against Claim 8, namely Brobst, are not the same as Hoffert. In the present application and in Brobst, the purpose is to collect a specifically defined finite set of web pages for printing. For example, Brobst teaches the following at col. 6, lines 43-48:

Web page selection mechanism 540 is used to create a list of user selected and related web pages. Web page storing mechanism 550 stores the list of selected and related web pages in a URL format. Conglomeration mechanism 560 takes the selected URLs and formats them into a flattened web page.

Brobst also teaches that related web pages can be defined by specifying a digging level or nesting level from which to gather further links. In any event, the final list of URLs collected under the teaching of Brobst is gathered into a conglomerate web page for printing. [See, e.g., Brobst, Abstract.]

Though Brobst teaches that multiple web pages are parsed and gathered according to set criteria (such as nesting level, etc.), Brobst teaches no automatic mechanism by

which redundant web pages (caused by a URL on a lower level linking back to a previous URL) are excluded from the list of URLs for printing.

Brobst does indirectly include a mechanism relevant to recursive inclusion of web pages, in that Brobst includes a URL container. The URL container is storage assigned to the URLs which are to be processed into a flattened web page and printed. If a link is recursively added multiple times, the URL container would presumably fill up as the URL was added over and over again. (Or, if the URL container were arbitrarily large, the container would continue to grow.) Hence, a user could detect that something was wrong when the URL container filled (or grew enormously) before all desired web pages were collected--and before the printing process began. The user could then manually delete web pages from the list or specify other criteria such that the redundant URL is only gathered once. Hence, by the time a user of Brobst is ready to compile the list of URLs into a flattened web page for printing, the list must already have been completed and redundant printing therefore could not occur. For this reason, and others described below, it is respectfully asserted that the combination of Brobst and Hoffert would not have been obvious to one of ordinary skill in the art at the time the invention was made. Though not perfect, the teaching of Brobst would not ultimately result in redundant printing of web pages because the URLs are first compiled into a list and merged into a conglomerate page for printing. If there were a recursive loop of URLs, they could not be compiled into a list and merged into a single document.

Therefore, it is respectfully asserted that combining the teachings of Brobst and Hoffert would significantly deviate from the teachings of Brobst and would not be obvious to one of ordinary skill in the art.

Also with respect to Claim 8, the Examiner seeks to combine the teachings of Hoffert with Brobst arguing that:

Hoffert teaches a hash table scheme is used to guarantee that only unique new URLs are added to the database and if any URL link that is already found in the hash table, the URL is not added to the list of URLs for processing (col. 3, line 28-col. 4, line 23). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Brobst and

Hoffert to include each web page retrieved is represented in a hash table, and wherein if a web page appears more than once in the hash table, the web page is only printed once. By doing so, it would prevent printing duplicate data and also prevent the waste or loss of time and papers.

Here the Examiner says that combining these teachings would be obvious because it would prevent printing duplicate data and prevent waste. However, Brobst does not address duplicate printings of the same data and does not mention or suggest adding the proposed elements (*e.g.*, the hash table) from Hoffert. A proper *prima facie* case of obviousness cannot be established by combining the teachings of the prior art absent some teaching, incentive, or suggestion supporting the combination. *In re Napier*, 55 F.3d 610, 613, 34 U.S.P.Q.2d 1782, 1784 (Fed. Cir. 1995); *In re Bond*, 910 F.2d 831, 834, 15 U.S.P.Q.2d 1566, 1568 (Fed. Cir. 1990).

Furthermore, though Hoffert was not allowed until Aug. 28, 2002, the hash table teachings therein were known at least as early as April 30, 1997 (the filing date of the application from which Hoffert continued--see section (63) on the cover page of Hoffert). Hence, the hash table teaching would have been available to the inventors of Brobst and Dubbels. However, neither of those references makes use of a hash table to deal with the problem of recursive or redundant printing of web pages.

Furthermore, though the Examiner does not cite Dubbels against Claim 8, a review of Dubbels and its relationship to Brobst is informative as to the obviousness of the Examiner's proposed combinations.

Dubbels, like Brobst, is assigned to International Business Machines Corporation. Dubbels was filed nearly a year after Brobst, and, like Brobst, Dubbels deals with an apparatus for printing web pages. Dubbels notably includes a specific mechanism for preventing the recurrent addition of the initial "seed" web page used to begin the URL gathering process. Note that this mechanism only works to prevent the recurrence of one specific web page (called the "selected page" in Dubbels), and is not a mechanism by which the recurrence of any given URL is prevented. See Dubbels at col. 7, lines 24-43 which state in part:

A method 600 for printing multiple related web pages begins by invoking a selected web page (step 610).... Note that web page parsing and listing mechanism 540 performs steps 640-682 described below. The list is processed beginning with step 640. If the list is not empty (step 640=NO), the next URL in the list is selected (step 650). If the URL is a link to the selected page (step 660=YES) or is a link to a different server (step 670=YES), the URL is ignored and not added to the set of related web pages.

The "selected page" in this passage is the initial web URL from which the parsing mechanism begins its search for "related" web pages. By this mechanism in Dubbels, if a later URL links back to the initial "selected page," then the process will exclude the recurrent listing of the initial "selected page." According to Dubbels, this process only works for the initial selected page, and not generally for all pages.

Thus Dubbels teaches an improvement to Brobst in that if the initially selected URI is linked from nested pages, the initially selected URL is excluded from being listed again.

Notably however, neither Dubbels nor Brobst mentions the use of a hash table, or of preventing recurrent printing generally. It is noted that the teachings of Hoffert (i.e., use of a hash table) existed at the time Dubbels and Brobst were invented. Therefore, it is respectfully asserted that since neither Dubbels nor Brobst mentions the use of a hash table or advantages arising from preventing recurrent printing using a hash table, the combination of Brobst and Hoffert, as used to reject Claim 8, is not proper.

It is also noted that Dubbels describes an improvement to web page printing in that the initial "selected page" is prevented from being redundantly added to the print list. This fact indicates the inventors were aware of the problem of recursive printing, and their attempt to address recursive printing does not teach or suggest adding a hash table as taught by Hoffert, even though the teaching of hash tables was available to them at the time.

Hence, it is respectfully asserted that Claim 8 is allowable over the cited references. Furthermore, independent Claims 25, 33, and 34 include similar limitations as Claim 8, and are believed allowable for the reasons argued above.

By virtue of their dependence on allowable claims, claims which depend from independent Claims 8, 25, 33, and 34 are also believed allowable.

Since all independent claims are believed allowable, all independent claims are also therefore believed allowable by virtue of their dependence on allowable claims.

## II. Conclusion

It is respectfully urged that the subject application is patentable over Brobst et al. in view of Dubbels et al., and further in view of Hofiert et al., and is now in condition for allowance.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: 1.16.03

Respectfully submitted,



Patrick C. R. Holmes  
Reg. No. 46,380  
Carstens, Yee & Cahoon, LLP  
P.O. Box 802334  
Dallas, TX 75380  
(972) 367-2001  
ATTORNEY FOR APPLICANTS

2. (ONCE AMENDED) A method in a data processing system for printing web pages, the method comprising the data processing system implemented steps of:  
receiving a request to print a web page; and  
printing the web page and each web page associated with the web page;  
wherein the printing step automatically and individually prints each of a plurality of web pages associated with the web page on selected levels below the web page; and wherein if a first web page of the plurality appears more than once among the plurality, said first web page is only printed once.
3. The method of claim 2, wherein the printing step comprising:  
sending the web page and each web page associated with the web page on selected levels below the web page to a printer.
4. The method of claim 2, wherein the printing step comprising:  
sending the web page and each web page associated with the web page on selected levels below the web page to a display device.
5. The method of claim 2, wherein the printing step comprising:  
sending the web page and each web page associated with the web page on selected levels below the web page to a file.
6. The method of claim 2, wherein the data processing system is a client computer.
7. The method of claim 2, wherein the data processing system is a web server.
8. (ONCE AMENDED) A method in a data processing system for printing web pages, the method comprising the data processing system implemented steps of:  
responsive to an input selecting a current web page for printing, determining whether a maximum depth for printing has been reached;



identifying a set of universal resource identifiers located within the current web page in response to the maximum depth being unreachd;

retrieving the web page identified by the set of uniform resource locators; and

printing each web page retrieved;

wherein each web page retrieved is represented in a hash table, and wherein if a web page appears more than once in the hash table, said web page is only printed once.

9. The method of claim 8 further comprising:

repeating the determining, identifying, retrieving, and printing steps for each web page until the maximum depth has been reached.

10. The method of claim 8, wherein the printing step comprises sending each web page to an output device.

11. The method of claim 10, wherein the output device is a printer.

12. The method of claim 10, wherein the output device is a display device.

13. The method of claim 8, wherein the data processing system is a client computer.

14. The method of claim 8, wherein the data processing system is a web server.

15. The method of claim 8, wherein the determining, identifying, and retrieving steps are performed in a web server and wherein the printing step is performed in a client computer.

16. (ONCE AMENDED) A method for printing items comprising the data processing system implemented steps of:

receiving a request to print a current item, wherein additional items are associated with the current item in relationship in which the additional items are on levels below the current item;

printing the current item;  
determining whether additional items on levels below the current item are to be printed; and  
responsive to a determination that additional items are to be printed, printing the additional items;  
wherein if a first item appears more than once among the additional items, the first item is only printed once.

17. The method of claim 16, wherein the items are web pages associated using universal resource identifiers.

18. The method of claim 16, wherein the items are files associated using directories.

19. (ONCE AMENDED) A data processing system for printing web pages, the data processing system comprising:

receiving means for receiving a request to print a web page; and

printing means for printing the web page;

wherein the printing means automatically and individually prints each of a plurality of web pages associated with the web page on selected levels below the web page; and wherein if a first web page of the plurality appears more than once among the plurality, said first web page is only printed once.

20. The data processing system of claim 19, wherein the printing means comprises:

sending means for sending the web page and each web page associated with the web page on selected levels below the web page to a printer.

21. The data processing system of claim 19, wherein the printing means comprises:

sending means for sending the web page and each web page associated with the web page on selected levels below the web page to a display device.

22. The data processing system of claim 19, wherein the printing means comprises:

sending means for sending the web page and each web page associated with the web page on selected levels below the web page to a file.

23. The data processing system of claim 19, wherein the data processing system is a client computer.

24. The data processing system of claim 19, wherein the data processing system is a web server.

25. (ONCE AMENDED) A data processing system for printing web pages, the data processing system comprising:

determining means, responsive to an input selecting a current web page for printing, for determining whether a maximum depth for printing has been reached;

identifying means for identifying a set of universal resource identifiers located within the current web page in response to the maximum depth being unreached;

retrieving means for retrieving the web page identified by the set of uniform resource locators; and

printing means for printing each web page retrieved;

wherein each web page retrieved is represented in a hash table, and wherein if a web page appears more than once in the hash table, said web page is only printed once.

26. The data processing system of claim 25 further comprising:

repeating the determining means, identifying means, retrieving means, and printing means for each web page until the maximum depth has been reached.

27. The data processing system of claim 25, wherein the printing means comprises sending each web page to an output device.

28. The data processing system of claim 27, wherein the output device is a printer.

29. The data processing system of claim 27, wherein the output device is a display device.
30. The data processing system of claim 25, wherein the data processing system is a client computer.
31. The data processing system of claim 25, wherein the data processing system is a web server.
32. The data processing system of claim 25, wherein the determining means, identifying means, and retrieving means are performed in a web server and wherein the printing means is performed in a client computer.
33. A computer program product in a computer readable medium for printing web pages, the computer program product comprising:  
first instructions for receiving a request to print a web page; and  
second instructions for printing the web page and each web page associated with the web page on selected levels below the web page.
33. (ONCE AMENDED) A computer program product in a computer readable medium for printing web pages, the computer program product comprising:  
first instructions for receiving a request to print a web page; and  
second instructions for printing the web page and each web page associated with the web page on selected levels below the web page;  
wherein each web page to be printed is represented in a hash table, and wherein if a given web page appears in the hash table more than once, the given web page is only printed once.
34. (ONCE AMENDED) A computer program product in a computer readable medium for printing web pages, the computer program product comprising:

first instructions, responsive to an input selecting a current web page for printing, for determining whether a maximum depth for printing has been reached;

second instructions for identifying a set of universal resource identifiers located within the current web page in response to the maximum depth being unreached;

third instructions for retrieving the web page identified by the set of uniform resource locators; and

fourth instructions for printing each web page retrieved;

wherein each web page retrieved is represented in a hash table, and wherein if a web page appears more than once in the hash table, said web page is only printed once.

35. (ADDED) The method of Claim 2, wherein web pages selected for printing are represented in a hash table, and wherein if a web page matches an entry in the hash table, that web page is not printed.